

# **Demand Data Foundation (DDF) 2.0 with Unified Demand Forecast (UDF) on SAP HANA**

**Support Package SP 01**

# Document History

## Caution

Before you start the implementation, make sure that you have the latest version of this document, which you can find on SAP Service Marketplace at [service.sap.com/instguides](https://service.sap.com/instguides) > *Installation & Upgrade Guides* > *Industry Solutions* > *Industry Solution Guides* > *SAP for Retail* > *SAP Customer Activity Repository* > *SAP Customer Activity Repository 2.0 <your support package>* .

You can see an overview of the most important document changes in the following table:

Table 1

Version	Date	Description
2.01	2015-02-03	Added SAP NetWeaver 7.4 SP 09 as a new minimum requirement for SAP Customer Activity Repository 2.0 SP 01 including DDF and UDF; updated <i>Manage Demand Data Foundation (DDF)</i> section; updated <i>Information Available on SAP Service Marketplace</i> section; updated <i>SAP Notes for the Installation</i> section; updated <i>About this Document</i> section; updated <i>Fundamental Security Guides</i> section; updated <i>Authorization Requirements for Unified Demand Forecast (UDF)</i> section; updated <i>Naming Conventions</i> section; updated <i>Preparation</i> section under <i>Upgrade and Migration</i> ; updated <i>Introduction to Demand Data Foundation (DDF)</i> section; updated <i>Post-Installation</i> section; updated <i>Component Version Dependencies</i> section.
2.0	2014-10-21	Complete revision for the release of DDF 2.0 with UDF as components in SAP Customer Activity Repository 2.0.
1.04 (SP 04)	2014-07-23	Added reference to SAP Note 2020581 for SP 04 (collection note providing support package overview and implementation instructions); added reference to SAP Note 1798895 with manual correction instructions for implementing collection notes; added reference to SAP Note 2016825 on the independent release of the UDF AFL as of SAP HANA SPS 08; added information on how to do the optional upgrade to SAP HANA SPS 08; updated Standard Authorization Objects section; updated Component Version Dependencies section; enhanced description of delivery units for SAP HANA content; revised Upgrade and Migration section.
1.03 (SP 03)	2014-05-23	Added reference to SAP Note 1997902 for SP 03 (collection note providing support package overview and implementation instructions); updated and added several SAP Note numbers; updated installation information for UDF AFL; specifically added reference to new installation procedure for UDF AFL as of SAP HANA SPS 08; updated technical implementation information based on DDF installation scenarios; appended Introduction to Demand Data Foundation (DDF) section, updated Component Version Dependencies section, updated SAP Solution Manager section, updated Standard Authorization Objects section.
1.02 (SP 02)	2014-03-14	Updated technical implementation information; updated upgrade and migration information; updated SAP Note numbers; updated information on activation of SAP HANA content; added information on supported installation scenarios and related pre- and post-installation tasks; updated privileges assigned to UDF roles; updated installation information for UDF AFL.

Version	Date	Description
1.01 (SP 01)	2013-09-23	Added reference to SAP Note for SP 01 (collection note) providing support package overview and implementation instructions; adapted schema names and workflow for manual SAP HANA content activation; updated referenced SAP Note for manual SAP HANA content activation; added installation prerequisites and upgrade recommendation; added reference to SAP Note regarding load balancing; added information about maximum number of records for load balancing; updated UDF installation sequence.
1.0	2013-06-28	Initial version.

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# 1 Get Started

## 1.1 About this Document

### Purpose

This *Administrator's Guide* is the central starting point for the technical implementation of Demand Data Foundation (DDF) with Unified Demand Forecast (UDF) on a SAP HANA database.

#### Note

Use this *Administrator's Guide* as your main source of reference, together with the *Common Installation Guide for SAP Customer Activity Repository 2.0 SP01*, *SAP Assortment Planning for Retail 1.0 SP01*, *SAP Promotion Management for Retail 8.1 SP01*.

You can find both guides on SAP Service Marketplace at ► [service.sap.com/instguides](https://service.sap.com/instguides) ► *Industry Solutions* ► *Industry Solution Guides* ► *SAP for Retail* ► *SAP Customer Activity Repository* ► *SAP Customer Activity Repository 2.0 SP01* ►.

This *Administrator's Guide* gives you a technical overview of DDF with UDF, the software units, and the processes. It helps you design your DDF with UDF landscape based on your specific installation scenario. It also provides you with the information necessary to install and operate DDF with UDF and refers you to required other documentation.

The main sections are:

- [Technical Implementation \[page 20\]](#)  
Important technical information, including an overview of the related software units, the system landscape, as well as installation instructions for different scenarios
- [Upgrade and Migration \[page 28\]](#)  
Overview of the processes for upgrading or migrating to a DDF with UDF system landscape
- [Security \[page 31\]](#)  
Security-relevant information when setting up and operating DDF with UDF
- [Operation \[page 41\]](#)  
Most relevant information for operating DDF with UDF
- [Solution-Wide Topics \[page 50\]](#)  
Information about SAP Solution Manager, description of the available service-oriented architecture (SOA)

### Integration

DDF is a cross-industry reusable data layer in SAP Customer Activity Repository. It includes, for example, the data model, data import infrastructure, reuse frameworks (such as the exception handling or process controller), as well as reuse tools and user interfaces for data maintenance. DDF also stores master data and it supports UDF.

UDF provides the demand modeling and demand forecasting services. It includes an application function library (UDF AFL) and runs in the SAP HANA database.

Both DDF and UDF are components in SAP Customer Activity Repository and provide their functions and data through the respective consuming application. For a list of the consuming applications supported by DDF and UDF, see SAP Note [2001688](#).

## Constraints

Please note that this guide does not provide information about the following:

- Installation or configuration of the SAP NetWeaver Platform
- Installation or configuration of the SAP HANA database
- Installation, configuration, or integration with any of the SAP Business Suite components

## 1.2 SAP Notes for the Installation

### Note

Make sure that you have the up-to-date version of each of the following SAP Notes, which you can find on SAP Service Marketplace at ► [service.sap.com/notes](https://service.sap.com/notes) ►.

Table 2: SAP Notes for Demand Data Foundation (DDF) with Unified Demand Forecast (UDF)

SAP Note Number	Title	Description
You need to read and, when appropriate, implement the following SAP Notes if your installation scenario includes the following SAP Customer Activity Repository components:		
<ul style="list-style-type: none"><li>• DDF 2.0 (RTLDDF 200) as the cross-industry reusable data layer</li><li>• UDF AFL (UDFAFL_INST 100), revision 83 or higher, as the demand modeling and forecasting engine that you install and run in the SAP HANA database</li></ul>		
<a href="#">1809841</a>	Release strategy for the ABAP add-on RTLDDF	Information about planning the installation and upgrades of the ABAP add-on RTLDDF.
<a href="#">2001688</a>	Consuming Applications of Demand Data Foundation and Unified Demand Forecast	List of the consuming applications supported by DDF with UDF on SAP HANA, information on the minimum requirements.
<a href="#">2050229</a>	Release and Upgrade Information for Unified Demand Forecast Application Function Library (UDF AFL)	Only for UDF: Overview of all independent releases (revisions) of the UDF AFL as of revision 82 on SAP HANA Platform SPS 08 revision 82; instructions for installing or upgrading the UDF AFL using the recommended installation tools, <code>hdb1cm</code> or <code>hdb1cmgui</code> .
<a href="#">2004952</a>	Migration of UDF AFL and POS AFL from SAP HANA AFL as of SAP HANA Platform SPS 08	Only for UDF: Instructions for performing a mandatory one-time migration when upgrading from a UDF AFL on SAP HANA Platform SPS 06 or SPS 07; additional installation instructions.
<a href="#">1997526</a>	SAP HANA lifecycle manager with SAP HANA Database SPS 08	Only for UDF: Information on SAP HANA tools that you can use to install the UDF AFL. Note that the



SAP Note Number	Title	Description
		recommended tools depend on your edition of the SAP HANA Platform.
<a href="#">2075266</a>	SAP HANA Platform SPS 09 Release Note	Only for UDF: This note is only relevant for you if you want to use revision 90 or higher of the UDF AFL. In this case, you need to install the same revision of SAP HANA Platform SPS 09.
<a href="#">1898341</a>	Modeling or forecasting fails with failed decomposition	Information about how you can change the configuration for demand modeling and forecasting if the errors <a href="#">901 Failed execution for &amp;1</a> and <a href="#">926 Failed decomposition</a> occur.
<a href="#">2038829</a>	Corrections for unified rendering up to SAP_UI 740/09 I	Corrections to unified rendering for Web Dynpro applications; information about the required installation of SAP_UI 740 SP 10 on the back-end server when installing SAP NetWeaver 7.4 SP 02 up to SP 09.
<a href="#">2080423</a>	Assortment Planning: Sales Projection crashes with large data volumes	Performance optimization for the sales projections that DDF can generate for SAP Assortment Planning for Retail.
<a href="#">1846194</a>	Lack of permissions when using AFL	Only for UDF: Information on how to solve authorization issues when using an application function library such as the UDF AFL; information on the required database users, roles, and schemas.
<a href="#">1836357</a> (optional)	Install and Configure the UDF Launchpad	Only for UDF: Hardware requirements for the optional visualization tool <a href="#">Unified Demand Forecast Launchpad</a> ; installation and configuration instructions.

## 1.3 Information Available on SAP Service Marketplace and SAP Help Portal

The following additional information is available:

Table 3: Product-Specific Information

Information On	Internet Address	Title
SAP Customer Activity Repository	<a href="#">▶ help.sap.com/car ▶</a>	<i>SAP Customer Activity Repository 2.0</i>
SAP Assortment Planning for Retail	<a href="#">▶ help.sap.com/rap ▶</a>	<i>SAP Assortment Planning for Retail 1.0</i>
SAP Promotion Management for Retail	<a href="#">▶ help.sap.com/retail-pm ▶</a>	<i>SAP Promotion Management for Retail 8.1</i>

Information On	Internet Address	Title
Product Availability Matrix for <i>SAP Customer Activity Repository retail applications bundle 1.0</i>	► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Additional Information</i> ► <i>Product Availability Matrix</i> ►	CAR RETAIL APPL BUNDLE 1.0
Sizing for <i>SAP Customer Activity Repository retail applications bundle 1.0</i> systems	► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Additional Information</i> ► <i>Sizing</i> ►	CARAB_100_SIZING.zip
Installing SAP NetWeaver 7.40	► <a href="https://help.sap.com/nw74">help.sap.com/nw74</a> ► <i>Installation and Upgrade Information</i> ► <i>Installation Guides</i> ► <i>Plan and Install</i> ►	Installation Information
Setting up SAP Solution Manager  ➔ <b>Recommendation</b> You should always use the latest version of SAP Solution Manager. Failure to do so may cause problems when using the integrated Maintenance Optimizer (MOPZ) application.	► <a href="https://help.sap.com/solutionmanager71">help.sap.com/solutionmanager71</a> ► <i>Installation and Upgrade Information</i> ► <i>Installation Guide</i> ► ► <a href="https://help.sap.com/nw74">help.sap.com/nw74</a> ► <i>Installation and Upgrade Information</i> ► <i>Master Guide</i> ►	<i>Installation Guide</i> <i>Master Guide</i>
Installing SAP HANA	► <a href="https://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <i>Installation and Upgrade Information</i> ► <i>SAP HANA Server Installation and Update Guide</i> ►	<i>SAP HANA Server Installation and Update Guide</i>
Installing SAP HANA database clients	► <a href="https://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <i>Installation and Upgrade Information</i> ► <i>SAP HANA Client Installation and Update Guide</i> ►	<i>SAP HANA Client Installation and Update Guide</i>
Installing SAP HANA studio	► <a href="https://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <i>Installation and Upgrade Information</i> ► <i>SAP HANA Studio Installation and Update Guide</i> ►	<i>SAP HANA Studio Installation and Update Guide</i>
Using SAP HANA	► <a href="https://help.sap.com/hana_appliance">help.sap.com/hana_appliance</a> ► <i>System Administration and Maintenance Information</i> ► <i>SAP HANA Administration Guides</i> ► <i>SAP HANA Administration Guide</i> ►	<i>SAP HANA Administration Guide</i>
Information for developers on how to use the SAP HANA development tools to create comprehensive analytical models and to build applications with SAP HANA's interfaces and integrated development	► <a href="https://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <i>Development Information</i> ► <i>SAP HANA Developer Guide</i> ►	<i>SAP HANA Developer Guide</i>

Information On	Internet Address	Title
Information for modelers (or business analysts) on how to define data models that will be used in SAP HANA	► <a href="https://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <i>Modeling Information</i> ► <i>SAP HANA Modeling Guide</i> ►	<i>SAP HANA Modeling Guide</i>
Implementing SAP HANA Live for SAP ERP	► <a href="https://help.sap.com/hba">help.sap.com/hba</a> ► <i>Installation, Security, Configuration, and Operations Information</i> ► <i>Administrator's Guide</i> ►	<i>Administrator's Guide, SAP HANA Live for SAP Business Suite</i>

Table 4: General Quick Links

Description	Internet Address
SAP Help Portal	<a href="https://help.sap.com">help.sap.com</a>
SAP Service Marketplace	<a href="https://service.sap.com">service.sap.com</a>
SAP Notes	<a href="https://service.sap.com/notes">service.sap.com/notes</a>
SAP Ramp-up Knowledge Transfer	<a href="https://service.sap.com/rkt">service.sap.com/rkt</a>
Release Notes	<a href="https://service.sap.com/releasesnotes">service.sap.com/releasesnotes</a> (for older releases of SAP products) <div> <p><b>i Note</b></p> <p>Release notes are now published in the "What's New..." section of your product's Application Help. Demand Data Foundation (DDF) and Unified Demand Forecast (UDF) are components of SAP Customer Activity Repository. You can therefore find the release notes in the following section: ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Application Help</i> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>What's New in SAP Customer Activity Repository</i> ► <i>&lt;your release&gt;</i> ►.</p> </div>
SAP Software Download Center	<a href="https://support.sap.com/swdc">support.sap.com/swdc</a>
Product Availability Matrix	<a href="https://support.sap.com/pam">support.sap.com/pam</a>
Released Platforms and Operating Systems	<a href="https://service.sap.com/platforms">service.sap.com/platforms</a>
Security	<a href="https://service.sap.com/security">service.sap.com/security</a>
System Sizing	<a href="https://service.sap.com/sizing">service.sap.com/sizing</a>
SAP Solution Manager	<a href="https://support.sap.com/solutionmanager">support.sap.com/solutionmanager</a>

## 1.4 Naming Conventions

### **i Note**

There are general naming conventions that apply to all components of the SAP Customer Activity Repository retail applications bundle including Demand Data Foundation (DDF) and Unified Demand Forecast (UDF). For more information, see the *Naming Conventions* section in the *Common Installation Guide* (the guide location is indicated in the table below).

The following additional naming conventions apply throughout this Administrator's Guide for DDF with UDF on SAP HANA:

Table 5: Naming Conventions in this Administrator's Guide

Term	Description
ABAP default db user	The default user for the database configured for ABAP usage (as in transaction db01).
Common Installation Guide	Common Installation Guide for SAP Customer Activity Repository 2.0 SP01, SAP Assortment Planning for Retail 1.0 SP01, SAP Promotion Planning for Retail 8.1 SP01. You can find this guide on SAP Help Portal at <a href="https://help.sap.com/car">help.sap.com/car</a> > <a href="#">Installation and Upgrade Information</a> > <a href="#">Installation Guide</a> .
Common Master Guide	Common Master Guide for SAP Customer Activity Repository 2.0 SP01, SAP Assortment Planning for Retail 1.0 SP01, SAP Promotion Planning for Retail 8.1 SP01. You can find this guide on SAP Help Portal at <a href="https://help.sap.com/car">help.sap.com/car</a> > <a href="#">Installation and Upgrade Information</a> > <a href="#">Master Guide</a> .
consuming application	An application using the cross-industry reusable data layer Demand Data Foundation (DDF).
data replication framework (DRF)	The infrastructure used to distribute data from the Master Data Governance (MDG) hub (for example, your SAP ERP system) to target systems. For more information about the DRF, see SAP Help Portal for Master Data Governance at <a href="https://help.sap.com/mdg">help.sap.com/mdg</a> .
Demand Data Foundation (DDF)	<p>An add-on to the SAP NetWeaver Platform and a component in SAP Customer Activity Repository. DDF is a cross-industry reusable data layer designed for analyzing and modeling historical demand data and forecasting future demands. DDF is also the layer that supports the Unified Demand Forecast (UDF) forecasting engine. DDF includes the data model, the data import infrastructure, reuse frameworks (such as exception handling or process controller), as well as reuse tools for data maintenance and user interfaces for data maintenance.</p> <p>Besides the transactional data, DDF stores master data. It provides a relational model of those objects for modeling, analyzing, and forecasting demands. DDF allows for the implementation of transactional (OLTP) and analytical (OLAP) use cases.</p>
RTLDDF 200	The software component version of Demand Data Foundation (DDF) for this release. RTLDDF 200 also includes the delivery units with the SAP HANA content for DDF and UDF.
SAP HANA content	<p>Packages with SAP HANA views and SQLScript procedures that can be maintained in SAP HANA studio. SAP HANA content is contained in delivery units. Each delivery unit is shipped via a dedicated SAP HANA Transport Container (HTC, sometimes referred to as ABAP TLOG object) in the RTLDDF 200 software component version.</p> <p>DDF, UDF, and SAP Customer Activity Repository all have dedicated SAP HANA content.</p>
SAP Ramp-Up Knowledge Transfer (SAP RKT)	An element of the SAP Solution Ramp-Up process that delivers early product- and task-related knowledge to experienced SAP or partner consultants in ramp-up

Term	Description
	projects and to all other roles involved in the ramp-up process (such as sales and customer administrators).
UDFAFL_INST 100	The software component version of the Unified Demand Forecast application function library (UDF AFL). The releases of the UDFAFL_INST 100 are called "revisions". For more information, see <a href="#">Component Version Dependencies [page 21]</a> .
Unified Demand Forecast (UDF)	<p>A component that provides demand modeling and forecasting services to the consuming applications of Demand Data Foundation (DDF) and SAP Customer Activity Repository.</p> <p>UDF includes an application function library (UDF AFL) that is not specific to any consuming application and can generate a single demand value plus accompanying information (baseline demand, promotional lifts, and other explanatory information) based on historical data from a specific demand data source (for example, consumption data). The thus generated "UDF forecast" always applies to a particular product, in a particular location, in a given context (date, price, offer, or any combination of demand influencing factors), for a specific period of time (a day or a week).</p> <p>One of the key features of UDF is demand decomposition by demand influencing factor (DIF): UDF can indicate how much of the demand is due to the baseline demand and how much is due to each DIF (for example, system DIFs such as tactic, seasonality, offer, price).</p>
usage type	<p>Terminology change:</p> <p>As of software provisioning manager 1.0 SP 07 (SL Toolset 1.0 SP 12), the term "product instance" replaces the term "usage type" for SAP systems based on SAP NetWeaver 7.3 including enhancement package 1 and higher. Note that there is no terminology change for older releases and the mentioned terms can be used as synonyms.</p>

## 1.5 Introduction to Demand Data Foundation (DDF)

Demand Data Foundation is a cross-industry reusable layer that includes a data model, data import infrastructure, reuse framework (such as exception handling and process controller), and reuse tools (such as data maintenance and scheduling interfaces).

DDF also supports Unified Demand Forecast (UDF), a forecasting engine designed to model historical demand data and forecast future demands.

DDF runs on the SAP HANA database, which stores transactional data and master data. The relational data model allows the consuming applications and UDF to use the data in an easily consumable way.

### **i** Note

- Both DDF and UDF are components of SAP Customer Activity Repository.

- For more information about UDF, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Demand Modeling and Forecasting* ►.
- You use the functions and data provided by DDF and UDF through the respective consuming application. For more information about the supported consuming applications and the minimum requirements, see SAP Note [2001688](#).

## Implementation

The best implementation approach depends on several factors, such as your system landscape, data integration, and blueprinting decisions. For more information, see [Technical Implementation Information \[page 22\]](#).

Correct data integration is important to support the functions of DDF and UDF. When DDF is set up as the foundation for multiple consuming applications, the impact of this data integration becomes greater.

## Integrate Master Data

DDF can receive the following master data from the master data system:

- Location (mandatory)
- Product (mandatory)
- Product Hierarchy (mandatory)
- Product Location (mandatory)
- Image
- Inventory
- Location Hierarchy
- Offer
- Transportation Lane
- Vendor
- Vendor Fund

For more information, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Integration Information* ► *Inbound Processing* ►.

You can integrate your master data in the following ways:

1. From an SAP ERP system

This option is best suited where the master data system of record is an SAP ERP application. SAP ERP uses the data replication framework (DRF), which is a standard framework, to send master data to DDF. The standard implementation of this framework maps the SAP ERP fields to the fields of the DDF tables. The DRF allows you to filter the data that you want to send to DDF based on criteria such as project rollouts or data volumes.

For more information about configuring the DRF, see the following sources:

- The *Enabling Demand Data Foundation (and Creating Demand Forecast)* section for your installation scenario in the *Common Master Guide*
- The *Enabling Demand Data Foundation and Creating Demand Forecast* business process, which you can find under the *Customer Activity Repository* business scenario in SAP Solution Manager.

Note that the standard implementation requires SAP ERP 6.0 with Enhancement Package EHP 5 SP Stack 07 or higher or EHP 6 SP Stack 02 or higher. For more information about SAP ERP releases, see SAP Note [1484460](#).

## 2. From a legacy system

You can use this option when the system of record for your master data is not an SAP ERP application (SAP ERP 6.0 with Enhancement Package EHP 5 SP Stack 07 or higher or EHP 6 SP Stack 02 or higher). This option includes any legacy system.

DDF provides inbound interfaces to receive the data into the DDF tables. For more information, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Integration Information* ►.

## Integrate Historical Demand Data

Historical demand data is critical to the demand modeling and forecasting services provided by Unified Demand Forecast (UDF). You must provide the historical demand data through one of the ways described in this document to be able use this data as well as modeling and forecasting data in a consuming application (for example, to perform analytics in SAP Customer Activity Repository). UDF uses the historical demand data to analyze and quantify each of the factors that affected your unit sales in the past to be able to accurately forecast future demand.

As output, UDF provides the SAP HANA view `sap.is.ddf.udf.viz/CV_POS_TS` with forecast information to its consuming applications.

### ➔ Recommendation

- You should provide 2 years of historical demand data to ensure the proper interpretation of seasonality, trend, and other yearly factors.
- Make sure that your historical data is at daily granularity. Weekly data is currently not supported. For more information about time series, see Customizing (transaction **SPRO**) under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Imported Data* ► *Time Series* ► *Define Time Series for Key Figure Configuration* ►.

DDF can receive different types of historical demand data, based on the following time series:

- Point-of-sale (POS) data
- Generic consumption data
- Sales orders

Each time series is completely independent. You can have separate outputs as a result of the modeling and forecasting processes. These outputs allow you to see different demand influencing factors (DIFs) by the different DataSources in the same system.

Time series details:

1. POS data provided by SAP Customer Activity Repository as daily aggregated transaction log (TLOG) data (time series source: virtual data model `POS_VDM`).

To use this time series, you must implement SAP Customer Activity Repository.

With DDF and UDF licensed as part of SAP Customer Activity Repository, you can take advantage of the features delivered with SAP Customer Activity Repository.

We recommend that you use 2 years of TLOG data.

In the modeling and forecasting processes, you can access the TLOG data through the `POS_VDM` virtual data model. The VDM allows UDF to consume the SAP HANA view `sap.is.retail.car/POSAggregatedSalesByArticleLocation` in the SAP HANA content of SAP Customer Activity Repository. The data is aggregated dynamically to the daily level on the SAP HANA Database in real time. In this data, the product, location, sales organization, distribution channel, and order channel must match with the master data that is available in DDF.



For more information about this time series, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Data Management* ► *Time Series* ► *SAP HANA Content for DDF with UDF* ►.

2. POS data persisted in DDF from the POS Inbound Processing Engine (PIPE) (time series source: POS\_TS)  
You can use this option if you have the SAP POS Data Management (SAP POS DM) 1.0 application and are considering implementing a consuming application before implementing SAP Customer Activity Repository. If an upgrade to SAP Promotion Management for Retail 8.0 is in scope, this option is a seamless migration.

### **i** Note

- The POS data persisted in DDF uses offers that were created in SAP Promotion Management for Retail.
- You cannot use the ERP Promotion view with this time series. For more information about this view, see the *Integration Considerations* section below.

The following additional information is available on SAP Help Portal for SAP Customer Activity Repository:

Table 6

Description	SAP Help Portal	Section
DDF time series	► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>Demand Data Foundation</i> ► <i>Data Management</i> ► <i>Time Series</i> ► <i>Sales</i> ►	<i>Sales</i>
POS transaction management	► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>POS Transaction Management</i> ►	<i>POS Transaction Management</i>
Sending data to DDF	► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>POS Transaction Management</i> ► <i>Task Processing</i> ► <i>Tasks for Sending Data to Follow-On Applications</i> ► <i>Sending Data to DMF-Based Applications</i> ►	<i>Sending Data to DMF-Based Applications</i>

3. POS data persisted in DDF from a legacy system (time series source: POS\_TS)  
You can use this option when you have a legacy system that stores transaction log (TLOG) or POS data and you do not want to persist 2 years of TLOG data in SAP Customer Activity Repository, or you do not want to implement SAP Customer Activity Repository and do not have SAP POS Data Management (SAP POS DM) 1.0.  
During a data integration project, you can determine the best way to capture and push this data into DDF. We recommend that you first perform a one-time push of the historical data. Then you include the latest sales data incrementally. This data is at the product, location, day, and channel level.  
To receive the data, DDF uses the *Sales* (/DMF/BI\_SALES\_DATA) inbound interface. For more information about this time series, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Data Management* ► *Time Series* ► *Sales* ►.

### **i** Note

- You cannot use the ERP Promotion view with this time series. For more information about this view, see the *Integration Considerations* section below.
- You must use the historical promotions from the legacy system to match historical offers with the POS data that is persisted in DDF.

4. Sales order data provided by SAP Customer Activity Repository (time series source: virtual data model SO\_VDM)

To use this time series, you must implement SAP Customer Activity Repository.

You can use this option to model and forecast sales orders (typically from a Web channel or non-brick-and-mortar store). Sales orders are available in SAP ERP. They are also available in SAP Customer Activity Repository (with multichannel information) through the SAP Landscape Transformation (SLT) replication. In this data, the product, location, sales organization, distribution channel, and order channel must match the master data that is available in DDF.

You can access the sales order data through the SO\_VDM virtual data model. The VDM allows UDF to consume the SAP HANA view `sap.is.retail.car/SalesDocumentAggregatedSalesByArticleLocation` in the SAP HANA content of SAP Customer Activity Repository.

For more information about this time series, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Data Management* ► *Time Series* ► *SAP HANA Content for DDF with UDF* ►.

5. Generic consumption data (time series source: CONS\_TS)

In some cases, generic consumption data may be the only data available to understand the historical demand of a particular product in a particular location. This data can either be purchased from a third party, can be available from a retailer in a legacy system, or can be given from a retailer to a manufacturer (such as with consumer packaged goods or manufacturing scenarios). DDF can receive generic consumption data and use it to model and forecast demand.

### **i** Note

If your data does not include information on promotions and offers, you can skip the *Integrate Promotions and Offers* section below.

You have the following options to send the consumption data to DDF:

- Use the SAP ERP data replication framework (DRF) (PCON outbound implementation). For more information, see the following sources:
  - The *Enabling Demand Data Foundation (and Creating Demand Forecast)* section for your installation scenario in the *Common Master Guide*
  - The *Enabling Demand Data Foundation and Creating Demand Forecast* business process, which you can find under the *Customer Activity Repository* business scenario in SAP Solution Manager
- Use the *Generic* inbound interface (`/DMF/TS_GENERIC_INBOUND`). For more information, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *SAP Library* ► *SAP Customer Activity Repository* ► *Demand Data Foundation* ► *Data Management* ► *Time Series* ► *Generic* ►.

## Integrate Promotions and Offers

Promotions are available in SAP ERP. Offers are more detailed views of promotions and can be available with SAP Promotion Management for Retail, for example. Offers can include information on tactics and tactic types, allowing you to quantify their impact on the promotion and, ultimately, on the demand of the product.

The following scenarios are possible:

- Historical offers were created in SAP Promotion Management for Retail.  
The closed-loop integration ensures that the same offer identifier (ID) can be used across systems. This integration aligns SAP Promotion Management for Retail, SAP ERP, and either SAP POS Data Management (SAP POS DM) 1.0 or SAP Customer Activity Repository.
- Historical offers were not created in SAP Promotion Management for Retail.  
The closed-loop integration must be created manually because the register and TLOG data do not distinguish the offer identifier (ID).

### **i** Note

There is no specific table in SAP ERP that keeps a relationship between an offer and a promotion. This relationship is updated in the following tables:

- WAKP (promotion line item if there is a promotion price or discount)
- WAKR (discounts at the level of the multichannel hierarchy or the article hierarchy)
- KNOBBYH (bonus buy)
- WPM\_TERM\_OFR\_MAP (mapping table), used for an exceptional scenario when an offer cannot be mapped to a single bonus buy. This results in doing a logical split in SAP ERP by generating a bogus offer identifier (ID) there. This bogus offer ID is then mapped to the parent offer in SAP Promotion Management for Retail.

In DDF, the /DMF/OFR\_EXP\_STS table provides the corresponding ERP Promotion information for an offer transferred from SAP Promotion Management for Retail. For more information, see [Historical promotions from SAP ERP](#) in the [Integration Considerations](#) section below.

## Integration Considerations

### 1. ERP Promotion view

Offers created in SAP Promotion Management for Retail are sent to SAP ERP (**D** [Type Code](#)). They are also stored in DDF as the system of record for later reference.

In addition to these offers, you can have promotions that were established in SAP ERP. These promotions provide valuable information to the modeling and forecasting processes.

The SAP ERP promotions are available as an SAP HANA view in SAP Customer Activity Repository through the SAP Landscape Transformation (SLT) replication. This view is used to align the promotions with the virtual data models POS\_VDM and SO\_VDM as time series sources.

Note that the ERP Promotion view does not include the offers that were created in SAP Promotion Management for Retail because this is not the system of record.

### 2. Historical promotions from SAP ERP

You can use this option when you have historical promotions in SAP ERP and do not plan to implement SAP Customer Activity Repository from the start. SAP ERP uses the data replication framework (DRF, [POFF](#) outbound implementation) to send this data to DDF. You can only use this option if the demand data contains the correct offer IDs.

For more information about configuring the DRF, see the [Enabling Demand Data Foundation and Creating Demand Forecast](#) business process, which you can find under the [Customer Activity Repository](#) business scenario in SAP Solution Manager.

3. Historical promotions from a legacy system

You can use this option when you have historical promotions in a legacy system that is not SAP ERP. DDF uses the [Offer](#) inbound interface (/DMF/OPIF\_OFFER\_INBOUND) to receive this data. For more information about this interface, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at [help.sap.com/car > SAP Library > SAP Customer Activity Repository > Demand Data Foundation > Data Management > Master Data > Offer](#) .

**i** Note

- You can only use this option if the demand data contains the correct offer IDs.
- This option involves more effort to extract and transform the data.

4. Future promotions

Future promotions follow the same logic as historical promotions. Future promotions should be considered on a frequent basis to ensure that the modeling and forecasting processes have the latest information available.

You should consider how to automate or schedule your integration option to send frequent updates.

## 2 Technical Implementation

### 2.1 Technical System Landscape

Demand Data Foundation (DDF) with Unified Demand Forecast (UDF) uses the following system landscape:

#### Overview of Technical System Landscape

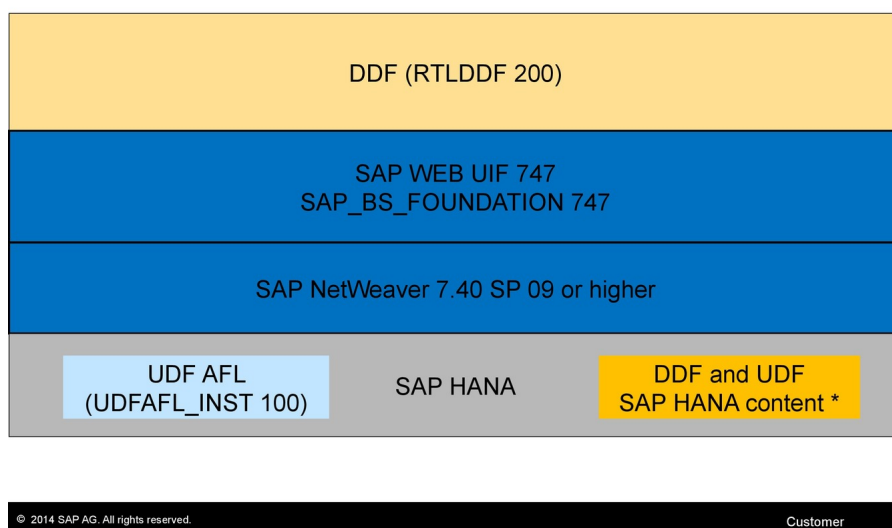


Figure 1: Technical System Landscape Overview

\* The SAP HANA content for DDF and UDF is contained in delivery units. Each delivery unit is shipped via a dedicated SAP HANA Transport Container (HTC, sometimes referred to as ABAP TLOG object) in the `RTLDDF 200` software component version.

### 2.2 Product Availability Matrix (PAM)

- For more information about the software components and operating systems for this release, see the *Common Master Guide*, section ► *Business Overview* ► *SAP Customer Activity Repository* ► *Software Units of SAP Customer Activity Repository* ► *Software Component Matrix* ►.

You can find this guide on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *Installation and Upgrade Information* ► *Master Guide* ►.

- Additionally, the software components and operating systems for this release are defined in the Product Availability Matrix (PAM). To access the PAM, go to SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *Additional*

[Information](#) ➤ [Product Availability Matrix](#) ➤. Alternatively, you can access the PAM on the SAP Support Portal at ➤ [support.sap.com/pam](https://support.sap.com/pam) ➤.

## 2.3 Component Version Dependencies

Before installing or upgrading Demand Data Foundation (DDF) with Unified Demand Forecast (UDF), make sure that you are aware of the following dependencies and have the correct version of each component:

- **Delivery**

Both DDF and UDF are components in SAP Customer Activity Repository 2.0 and provided as part of SAP Customer Activity Repository retail applications bundle. For more information, see the [Common Installation Guide](#) on SAP Help Portal at ➤ [help.sap.com/car](https://help.sap.com/car) ➤ [Installation and Upgrade Information](#) ➤ [Installation Guide](#) ➤.

- **UDF AFL**

UDF includes an application function library (UDF AFL) that you install and run in the SAP HANA Platform. The UDF AFL is provided as software component version `UDFAFL_INST 100`. The releases of the UDF AFL are called “revisions”. They are delivered independently of the SAP Customer Activity Repository releases. For more information, installation instructions, and an overview of all UDF AFL releases as of revision 82, see SAP Note [2050229](#).

- **Minimum requirements**

- UDF AFL revision 83 or higher
- SAP HANA Platform SPS 08 revision 83 or higher

- **Dependency UDF AFL <> SAP HANA**

For each revision of the UDF AFL, there is only one compatible revision of the SAP HANA Platform. For example, you can only use revision 83 of the UDF AFL with revision 83 of the SAP HANA Platform. When you upgrade the AFL, you must therefore also upgrade the platform, and vice versa. For more information, see SAP Note [2050229](#). Please note that several SAP HANA database revisions can be available for the same SAP HANA support package stack (SPS), so make sure to select the right one.

- **Dependency UDF AFL <> DDF ABAP**

- The ABAP stack for DDF (software component version `RTLDDF 200`) depends on a minimum revision of the UDF AFL in the SAP HANA Platform. Backward compatibility is ensured, however, so that you can always install newer revisions of the AFL (and the platform).
- The dependency is not restricted to the SAP Retail solution installed on top of SAP Customer Activity Repository. It also applies to any other application powered by SAP HANA that is co-deployed on the same SAP HANA system.
- Note that `RTLDDF 200` includes the delivery units with the SAP HANA content for both DDF and UDF.

## 2.4 Preparation, Installation, and Post-Installation of Demand Data Foundation (DDF)

This section describes the overall technical implementation of Demand Data Foundation (DDF) with Unified Demand Forecast (UDF). You can choose from different scenarios depending on your implementation requirements.

### **i** Note

Please note the following constraints:

- The section does not provide detailed information on superior or subordinate components. Additional technical dependencies may exist without being mentioned explicitly here.
- The scenarios described in the following are intended as examples of how you can use SAP software in your organization. Each scenario will most likely need adapting before you can run it in your specific system landscape. To determine whether you can use a scenario productively, first check your specific requirements and system landscape.

### 2.4.1 Preparation

Choose the Demand Data Foundation (DDF) scenario that is relevant for you and proceed as described. For more information about the consuming applications supported by DDF and UDF, see SAP Note [2001688](#).

Table 7: DDF and UDF Scenarios

Scenarios	Steps
SAP Customer Activity Repository, <b>with</b> Demand Data Foundation, <b>with</b> Unified Demand Forecast	<p>This scenario includes DDF (software component version RTLDLF 200) as the cross-industry reusable data layer and UDF as the demand modeling and forecasting engine. UDF includes an application function library (software component version UDFAFL_INST 100) that you install and run in the SAP HANA database.</p> <p>To prepare the installation of DDF and UDF, follow the instructions in the <i>Prerequisites</i> section of the <i>Common Installation Guide</i>.</p> <p>You can find this guide on SAP Help Portal at ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Installation and Upgrade Information</i> ► <i>Installation Guide</i> ►.</p>
SAP Customer Activity Repository, <b>with</b> Demand Data Foundation, <b>without</b> Unified Demand Forecast	<p>This scenario includes DDF (software component version RTLDLF 200) as the cross-industry reusable data layer. Please note that it does not include demand modeling and forecasting with UDF.</p> <p>To prepare the installation of DDF, follow the instructions in the <i>Prerequisites</i> section of the <i>Common Installation Guide</i>.</p> <p>You can find this guide on SAP Help Portal at ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Installation and Upgrade Information</i> ► <i>Installation Guide</i> ►.</p>
Other consuming applications, <b>with</b> Demand Data Foundation, <b>with</b>	<p>This scenario includes DDF (software component version RTLDLF 200) as the cross-industry reusable data layer and UDF as the demand modeling and forecasting engine. UDF includes an application function library (software component version UDFAFL_INST 100) that you install and run in the SAP HANA database.</p>



Scenarios	Steps
Unified Demand Forecast	<p><b>i Note</b></p> <p>This scenario does not include SAP Customer Activity Repository as a consuming application of DDF and UDF.</p> <p>The prerequisites for this scenario include:</p> <ol style="list-style-type: none"> <li>1. SAP NetWeaver 7.4 SP 09 Application Server (or higher) <p>If you use the Web Dynpro application from the back-end server, ensure that you have installed the SAP_UI 740 SP 10 component. If you have a lower version, ensure that you analyze and implement SAP Note <a href="#">2038829</a>.</p> </li> <li>2. SAP HANA Platform SPS 08 (revision 83 or higher) including SAP HANA studio <ul style="list-style-type: none"> <li>◦ Make sure that you have the correct revision of the SAP HANA database. For more information, see <a href="#">Component Version Dependencies [page 21]</a>.</li> <li>◦ Make sure that your version of SAP HANA studio is in sync with that on the server (DB). For more information, see the <a href="#">SAP HANA Server Installation and Update Guide</a> and the <a href="#">SAP HANA Studio Installation and Update Guide</a> for the corresponding SAP HANA support package stack (SPS) and revision. You can find both guides on SAP Help Portal at ► <a href="http://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <a href="#">Installation and Upgrade Information</a> ►.</li> </ul> </li> <li>3. Make sure that the script server for the SAP HANA database is activated. For more information, see SAP Note <a href="#">1650957</a>.</li> <li>4. Set up the required users and their privileges. For more information, see <a href="#">Authorization Requirements for Unified Demand Forecast (UDF) [page 38]</a>.</li> <li>5. If applicable to your business scenario, analyze and implement the following SAP Notes (applicable only for SAP ERP 6.0 EHP5 and higher): <ul style="list-style-type: none"> <li>◦ <a href="#">1983853: DRFOUT: Enhance the product attributes for replication</a></li> <li>◦ <a href="#">1994823: EA-RETAIL: Enhance the product characteristics to include Fashion Grade for replication</a></li> <li>◦ <a href="#">2004326: DRFOUT: Inconsistent product data is replicated in the receiving system</a></li> <li>◦ <a href="#">2032294: DRFOUT: Extension of product attributes for data replication</a></li> </ul> </li> </ol>

## 2.4.2 Installation

### **i Note**

Choose the same scenario as in the [Preparation \[page 22\]](#) section.

To install DDF and UDF, follow the instructions in the [Common Installation Guide](#), which you can find on SAP Help Portal at ► [help.sap.com/car](http://help.sap.com/car) ► [Installation and Upgrade Information](#) ► [Installation Guide](#) ►. Proceed as follows:

- For DDF, proceed as described in section ► [Installation Scenarios](#) ► [SAP Customer Activity Repository](#) ► [Installation](#) ► [Install ABAP Back-End Server](#) ► [Install SAP Customer Activity Repository Retail Applications Bundle](#) ►.




- For UDF, proceed as described in section ► [Installation Scenarios](#) ► [SAP Customer Activity Repository](#) ► [Post-Installation](#) ► [Install and Set Up Unified Demand Forecast \(UDF\) \(Optional\)](#) ► [Install the UDF AFL](#) ►.

## 2.4.3 Post-Installation


Choose the same scenario as in the [Preparation \[page 22\]](#) and [Installation \[page 23\]](#) sections.

Table 8: DDF and UDF Post-Installation Scenarios

Scenarios	Steps
SAP Customer Activity Repository, <b>with</b> Demand Data Foundation, <b>with</b> Unified Demand Forecast	<ol style="list-style-type: none"> <li>Follow the post-installation instructions in the <i>Common Installation Guide</i>, section ► <a href="#">Installation Scenarios</a> ► <a href="#">SAP Customer Activity Repository</a> ► <a href="#">Post-Installation</a> ►. You can find this guide on SAP Help Portal at ► <a href="http://help.sap.com/car">help.sap.com/car</a> ► <a href="#">Installation and Upgrade Information</a> ► <a href="#">Installation Guide</a> ►.</li> </ol> <div style="background-color: #fff9c4; padding: 10px; margin: 10px 0;"> <p><b>i Note</b></p> <p>The provided SAP HANA content is structured and activated as follows:</p> <ul style="list-style-type: none"> <li>Structure: The SAP HANA content for DDF and UDF is spread over three delivery units: <ul style="list-style-type: none"> <li>HCO_DDF_RTLDDE</li> <li>HCO_DDF_UDF</li> <li>HCO_UDF_CORE</li> </ul> </li> </ul> <p>Each delivery unit is shipped via a dedicated SAP HANA Transport Container (HTC, sometimes referred to as ABAP TLOG object) in the RTLDDE 200 software component.</p> <p>Activation: During post-installation, you activate the SAP HANA content for DDF, UDF, and SAP Customer Activity Repository all at the same time, using a dedicated ABAP report. This activation also creates the ABAP schema mapping. Follow the instructions in the <i>Common Installation Guide</i>, section ► <a href="#">Installation Scenarios</a> ► <a href="#">SAP Customer Activity Repository</a> ► <a href="#">Post-Installation</a> ► <a href="#">Activate SAP HANA Content for SAP Customer Activity Repository</a> ►.</p> <p>You can find more information about activating SAP HANA content at ► <a href="http://help.sap.com/hana_platform">help.sap.com/hana_platform</a> ► <a href="#">Development Information</a> ► <a href="#">SAP HANA Developer Guide</a> ► <a href="#">Setting Up the Analytic Model</a> ► <a href="#">Creating Views</a> ► <a href="#">Activating Objects</a> ►.</p> </div> <ol style="list-style-type: none"> <li>Complete the UDF setup as described in the <i>Common Installation Guide</i>, section ► <a href="#">Installation Scenarios</a> ► <a href="#">SAP Customer Activity Repository</a> ► <a href="#">Post-Installation</a> ► <a href="#">Install and Set Up Unified Demand Forecast (UDF) (Optional)</a> ►.</li> <li>Complete the DDF setup as described in the <i>Common Installation Guide</i>, section ► <a href="#">Installation Scenarios</a> ► <a href="#">SAP Customer Activity Repository</a> ► <a href="#">Post-Installation</a> ► <a href="#">Configure Demand Data Foundation (DDF)</a> ►.</li> </ol>
SAP Customer Activity Repository, <b>with</b> Demand	<ol style="list-style-type: none"> <li>Follow the post-installation instructions in the <i>Common Installation Guide</i>, section ► <a href="#">Installation Scenarios</a> ► <a href="#">SAP Customer Activity Repository</a> ► <a href="#">Post-Installation</a> ►.</li> </ol>

Scenarios	Steps
Data Foundation, <b>without</b> Unified Demand Forecast	<p>You can find this guide on SAP Help Portal at ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Installation and Upgrade Information</i> ► <i>Installation Guide</i> ►.</p> <ol style="list-style-type: none"> <li>As your scenario does not include UDF, you can skip section <i>Install and Set Up Unified Demand Forecast (UDF) (Optional)</i>.</li> <li>In section <i>Configure Demand Data Foundation (DDF)</i>, you can skip the steps related to UDF.</li> </ol>
Other consuming applications, <b>with</b> Demand Data Foundation, <b>with</b> Unified Demand Forecast	<div> <div>  <b>Note</b> </div> <div> <p>This scenario does not include SAP Customer Activity Repository as a consuming application of DDF and UDF.</p> </div> </div> <ol style="list-style-type: none"> <li>Check which business functions you need to activate. <div> <div>  <b>Recommendation</b> </div> <div> <ul style="list-style-type: none"> <li>Business functions should be activated by a system administrator.</li> <li>Once a business function is active, we recommend that you do not deactivate it.</li> <li>For more information about DDF business functions, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>Demand Data Foundation</i> ► <i>Business Functions</i> ►.</li> </ul> </div> </div> </li> <li>Activate the following business functions: <ul style="list-style-type: none"> <li>/DMF/DDF_IMDB_PL_TD (<i>Decompression of Product Location Price Data</i>)</li> <li>/DMF/DDF_IMDB_TS (<i>Decompression of Time Series Data</i>)</li> </ul> </li> <li>To use demand modeling and forecasting with Unified Demand Forecast (UDF), activate the following business functions in the following order: <ul style="list-style-type: none"> <li>/DMF/FORECAST (<i>Activation of Forecast Engine</i>)</li> <li>/DMF/DDF_UDF (<i>Activation of Unified Demand Forecast</i>)</li> </ul> </li> <li>Activate additional business functions: <ul style="list-style-type: none"> <li>/DMF/OFR_FIN_CALC_OPT (<i>Optimizations for Offer Financials</i>)</li> </ul> <div> <div>  <b>Recommendation</b> </div> <div> <p>Although this business function is considered optional, we highly recommend that you activate it. With the business function activated, you get significant improvements in memory and performance.</p> </div> </div> <ul style="list-style-type: none"> <li>Activate the optional business function /DMF/DDF_IMDB_LANE_TD (<i>Decompression of Lane Price and Time Dependent Data</i>) if applicable to your implementation scenario.</li> <li>Only activate the optional business function /DMF/DDF_IMDB_OFR_FIN (<i>Decompression of Offer Financials Data</i>) if you want to store offer financials data on the database in a decompressed format. The business function enables you to execute the /DMF/OFFER_FIN_MIGRATION report for this purpose. For more information, see the report documentation (transaction <b>SE38</b>).</li> </ul> </li> <li>Activate the SAP HANA content for DDF and UDF.</li> </ol>

Scenarios	Steps
	<p>A dedicated ABAP report is available for this. Proceed as described in SAP Note <a href="#">1981340</a>. This activation also creates the ABAP schema mapping.</p> <div> <p><b>i Note</b></p> <p>The SAP HANA content for DDF and UDF is provided as follows:</p> <ul style="list-style-type: none"> <li>It is spread over three delivery units: <ul style="list-style-type: none"> <li>HCO_DDF_RTLDDF</li> <li>HCO_DDF_UDF</li> <li>HCO_UDF_CORE</li> </ul> </li> <li>Each delivery unit is shipped via a dedicated SAP HANA Transport Container (HTC, sometimes referred to as ABAP TLOG object) in the RTLDDF 200 software component.</li> </ul> </div> <p>You can find more information about activating SAP HANA content at <a href="#">help.sap.com/hana_platform</a> &gt; <i>Development Information</i> &gt; <i>SAP HANA Developer Guide</i> &gt; <i>Activating Objects</i>.</p> <p>6. Import SAP Enterprise Portal roles:</p> <p>For user authorization, you can use the roles from the SAP NetWeaver Business Client software and the SAP Enterprise Portal component. Both sets of roles operate in the same manner. Using the SAP Enterprise Portal is optional.</p> <p>The PFCG roles have been created for use in SAP NetWeaver Business Client. To use the functions of these roles in SAP Enterprise Portal, you must upload the roles from the SAP system to the portal.</p> <p>You can upload the following PFCG roles:</p> <ul style="list-style-type: none"> <li>SAP_ISR_DDF_MASTER</li> <li>SAP_ISR_DDF_READONLY_MASTER</li> </ul> <p>For a description of these roles, see <a href="#">Standard Roles [page 33]</a></p> <p>You can use the <a href="#">Role Upload</a> tool to generate the SAP Enterprise Portal roles automatically. You can also enhance the roles; for example, you can create your own iViews. For more information about the tool, see SAP Note <a href="#">1685257</a>.</p> <p>7. Analyze and implement the following SAP Notes for UDF:</p> <ul style="list-style-type: none"> <li><a href="#">1898341</a>: Updated information on configuration changes for demand modeling and forecasting</li> <li><a href="#">1911141</a>: Setting UDF-specific performance optimization parameters in the SAP HANA database</li> </ul> <p>8. Optional: Install and configure the Unified Demand Forecast Launchpad.</p> <p>The UDF Launchpad is an optional visualization tool that supports the statistical analyst and data analyst in validating the forecasts generated with UDF. The tool allows you to compare historical key performance indicators (KPIs), modeled KPIs, and forecasted KPIs.</p>

Scenarios	Steps
	<div>  <b>Note</b> </div> <p>The use of the UDF Launchpad is optional. You can download it from the SAP Store at <a href="https://store.sap.com">store.sap.com</a>. Please note that the UDF Launchpad has been designed as a template. There is no product support and the user interface is only available in English.</p> <p>Please also note that there are additional hardware requirements for using the tool and that you must plan your system landscape accordingly. For more information about those requirements, see the <i>UDF Launchpad Installation Guide</i>, which you can find in SAP Note <a href="#">1836357</a>.</p> <p>More information:</p> <ul style="list-style-type: none"> <li>◦ Installing and configuring the UDF Launchpad: SAP Note <a href="#">1836357</a> and the SAP Ramp-Up Knowledge Transfer (SAP RKT) content for UDF</li> <li>◦ Using the UDF Launchpad: ► <a href="https://help.sap.com/car">help.sap.com/car</a> ► <i>Application Help</i> ► <i>SAP Library</i> ► <i>SAP Customer Activity Repository</i> ► <i>Demand Data Foundation</i> ► <i>General Services</i> ► <i>Validate Forecasts with UDF Launchpad</i> ►</li> </ul>

### 3 Upgrade and Migration

This section outlines the overall technical migration from *Demand Management Foundation (DMF)* to *Demand Data Foundation (DDF) with Unified Demand Forecast (UDF)*. Note that DDF and UDF are components in SAP Customer Activity Repository 2.0 and are installed and upgraded as part of this application.

#### Caution

If you already have an installation of SAP Customer Activity Repository 2.0, you must perform a software upgrade rather than a new installation. For more information, see the following:

- *Upgrade Guide, SAP Customer Activity Repository 2.0 <your support package>*, available on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *Installation and Upgrade Information* ► *Upgrade Guide* ►
- SAP Note [2116084](#)

#### Caution

The *DMF to DDF with UDF* scenario described in the following does not provide detailed information on the subordinate or superior components that may be required. This means that additional software dependencies may exist without being mentioned explicitly here.

The scenario is only intended as an example of how you can use SAP software in your organization. The scenario will most likely need adapting before you can run it in your specific system landscape. To determine whether you can use the scenario productively, first check your specific requirements and system landscape.

The following figure illustrates the technical migration from *DMF* to *DDF with UDF*:

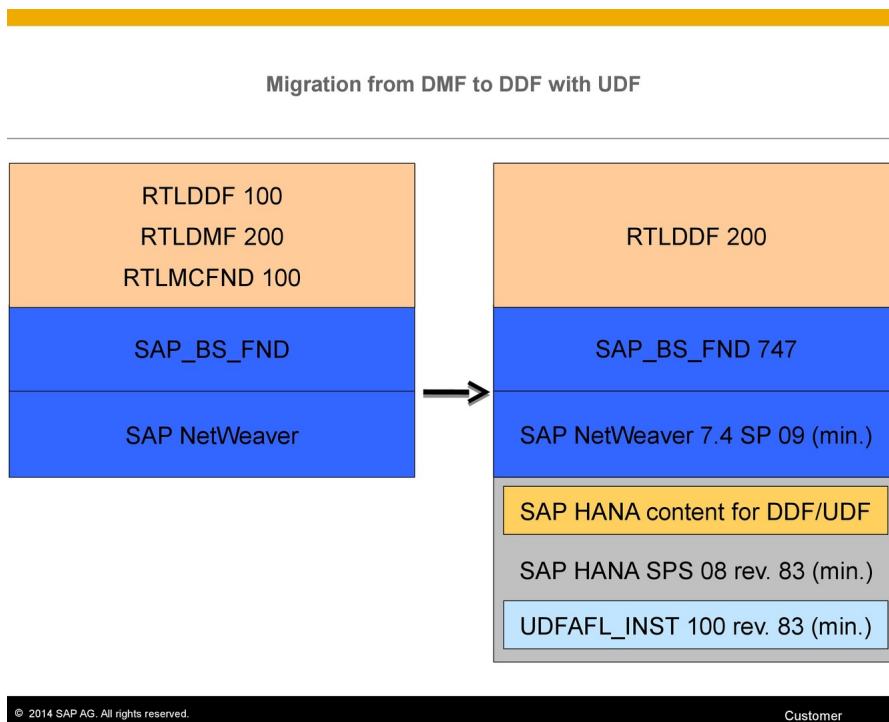


Figure 2: Technical Migration

## 3.1 Preparation

### Migrate Compressed Data

#### **i** Note

For information about the documentation of the DDF business functions, see SAP Library for SAP Customer Activity Repository on SAP Help Portal at [help.sap.com/car](https://help.sap.com/car) > *SAP Library* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *Business Functions*.

Define how you want to migrate your compressed data to a decompressed format by reading the documentation of the following business functions:

- Mandatory business functions:
  - *Decompression of Product Location Price Data* (/DMF/DDF\_IMDB\_PL\_TD)
  - *Decompression of Time Series Data* (/DMF/DDF\_IMDB\_TS)
- Optional business functions:
  - *Decompression of Lane Price and Time Dependent Data* (/DMF/DDF\_IMDB\_LANE\_TD)  
We recommend that you activate this business function.
  - *Decompression of Offer Financials Data* (/DMF/DDF\_IMDB\_OFR\_FIN)  
You should only activate this business function if you want to store offer financials data on the database in a decompressed format. The business function enables you to execute the /DMF/OFFER\_FIN\_MIGRATION report for this purpose. For more information, see the report documentation (transaction SE38).



## 3.2 Upgrade

### Migrate to SAP HANA

#### Caution

If you are applying a support package on an existing installation, you must activate the SAP HANA content again.

Migrating your database to SAP HANA requires some preparatory steps related to the database tables in your system. For example, you verify the usage of cluster tables and pool tables because database migration automatically resolves those to transparent tables.

SAP HANA runs natively on Unicode only. If your system does not yet run on Unicode, consider doing the conversion separately before migrating to SAP HANA. Technically, the Unicode conversion could be done during database migration (that is, during the heterogeneous system copy), but preparatory steps are required. For more information, see SAP Note [1051576](#).

### Migrate To Demand Data Foundation (DDF)

To migrate your installation to DDF, choose the *SAP Customer Activity Repository, with Demand Data Foundation, with Unified Demand Forecast* scenario in each of the following sections and follow the instructions:

1. Prepare the installation as described in [Preparation \[page 22\]](#).
2. Install the software as described in [Installation \[page 23\]](#).
3. Perform the post-installation as described in [Post-Installation \[page 24\]](#).

### Install or Upgrade the UDF AFL

To install or upgrade the application function library for Unified Demand Forecast (UDF AFL), follow these steps:

1. Read the [Component Version Dependencies \[page 21\]](#) section. You need to be aware of the dependencies and minimum requirements to ensure that UDF integrates with your DDF and SAP Customer Activity Repository system.
2. Follow the instructions in the *Common Installation Guide*, section ► *Installation Scenarios* ► *SAP Customer Activity Repository* ► *Post-Installation* ► *Install and Set Up Unified Demand Forecast (UDF) (Optional)* . You can find this guide on SAP Help Portal at ► [help.sap.com/car](https://help.sap.com/car) ► *Installation and Upgrade Information* ► *Installation Guide* .

## 4 Security

### 4.1 Fundamental Security Guides

Demand Data Foundation (DDF) is based on SAP NetWeaver technology. Therefore, the SAP NetWeaver security guides apply to DDF as well.

Unified Demand Forecast (UDF) relies on the access control mechanisms of the SAP HANA database. This includes user management, authentication, and authorization.

You can find more information in the following documents:

Table 9: Fundamental Security Guides

Security Guides for Scenario, Application, or Component	Most Relevant Sections
SAP NetWeaver Application Server ABAP Security Guide	► <a href="https://help.sap.com/nw_platform">help.sap.com/nw_platform</a> ► Security Information ► Security Guide ► Security Guides for SAP NetWeaver Functional Units ► Security Guides for the Application Server ► Security Guides for the AS ABAP ► SAP NetWeaver ► Application Server ABAP Security Guide ►
SAP HANA Security Guide SAP HANA Replication Security Guides	► <a href="https://help.sap.com/hana_appliance">help.sap.com/hana_appliance</a> ► Security Information ►

#### Note

You can find a complete list of the available security guides on SAP Service Marketplace at [service.sap.com/securityguide](https://service.sap.com/securityguide).

### 4.2 Security-Relevant Logging and Tracing

#### Logging and Tracing

Demand Data Foundation (DDF) relies on the logging and tracing mechanisms of SAP NetWeaver. For more information about logging and tracing, see ► [help.sap.com/nw74](https://help.sap.com/nw74) ► Security Information ► Security Guide ► Security Guides for SAP NetWeaver Functional Units ► Security Guides for the Application Server ► Security Guides for AS ABAP ► SAP NetWeaver Application Server ABAP Security Guide ► Auditing and Logging ►.

#### Logging and Tracing for Customizing Changes

To evaluate changes to the individual DDF Customizing tables, use the **scu3** transaction to activate the logging of changes to table data.

## 4.3 User Administration and Authentication

Demand Data Foundation (DDF) uses the user management and user authentication mechanisms provided with the SAP NetWeaver Platform, in particular the SAP NetWeaver Application Server ABAP (AS ABAP). Therefore, the security recommendations and guidelines for user administration and user authentication as described in the *Security Guide for SAP NetWeaver AS ABAP* apply to DDF as well. The guide is available on SAP Service Marketplace at ► [help.sap.com/nw\\_platform](https://help.sap.com/nw_platform) ► *Security Information* ► *SAP NetWeaver Security Guide* ► *Security Guides for SAP NetWeaver Functional Units* ► *Security Guides for the Application Server* ► *Security Guides for AS ABAP* ► *SAP NetWeaver Application Server ABAP Security Guide* ►.

### 4.3.1 User Management

This section provides information on user administration tools, required user types, and standard users delivered with Demand Data Foundation (DDF).

#### 4.3.1.1 User Administration Tools

For more information about user administration tools, see the following table:

Table 10: User Administration Tools

Tool	Most Relevant Sections	Prerequisites
User and role maintenance with SAP NetWeaver Application Server ABAP (AS ABAP) (transactions SU01, PFCG)	► <a href="https://help.sap.com/nw_platform">help.sap.com/nw_platform</a> ► <i>Security Information</i> ► <i>Security Guide</i> ► <i>Security Guides for SAP NetWeaver Functional Units</i> ► <i>Security Guides for the Application Server</i> ► <i>Security Guides for AS ABAP</i> ► <i>SAP NetWeaver Application Server ABAP Security Guide</i> ► <i>AS ABAP Authorization Concept</i> ►	SAP NetWeaver AS ABAP is running.

#### 4.3.1.2 User Types

Different user types require different security policies. For example, your security policy may specify that individual users that perform tasks interactively must regularly change their passwords, while this does not apply to users under which background processing jobs are run.

The user types for DDF include the following:

- Individual users:
  - Dialog users (for SAP GUI for Windows or Remote Function Call (RFC) connections)
  - Internet users (for internet connections; the same policies apply as for dialog users)

- Technical users:
  - Communication users (for dialog-free communication through external RFCs)
  - System and background users (for background processing and communication in the system, such as running scheduled inbound and outbound dispatcher jobs)

For more information about user types, see the *SAP NetWeaver Application Server ABAP Security Guide* on SAP Service Marketplace at ► [help.sap.com/nw\\_platform](https://help.sap.com/nw_platform) ► *Security Information* ► *Security Guide* ► *Security Guides for SAP NetWeaver Functional Units* ► *Security Guides for the Application Server* ► *Security Guides for AS ABAP* ► *SAP NetWeaver Application Server ABAP Security Guide* ►.

### 4.3.1.3 Standard Users

Demand Data Foundation (DDF) indirectly uses SAP NetWeaver standard users. DDF therefore does not require specialized standard users.

For more information about SAP NetWeaver user types, see the *SAP NetWeaver Application Server ABAP Security Guide*, which you can find on SAP Service Marketplace at ► [help.sap.com/nw74](https://help.sap.com/nw74) ► *Security Information* ► *Security Guide* ► *Security Guides for SAP NetWeaver Functional Units* ► *Security Guides for the Application Server* ► *Security Guides for AS ABAP* ► *SAP NetWeaver Application Server ABAP Security Guide* ►.

### 4.3.2 Integration into Single Sign-On (SSO) Environments

Demand Data Foundation (DDF) supports the single sign-on mechanisms provided by SAP NetWeaver. Therefore, the security recommendations and guidelines for user administration and user authentication as described in the *Security Guide for SAP NetWeaver Application Server ABAP (AS ABAP)* also apply to DDF. The guide also provides information about the available authentication mechanisms. It is available on SAP Service Marketplace at ► [help.sap.com/nw\\_platform](https://help.sap.com/nw_platform) ► *Security Information* ► *SAP NetWeaver Security Guide* ► *Security Guides for SAP NetWeaver Functional Units* ► *Security Guides for the Application Server* ► *Security Guides for AS ABAP* ► *SAP NetWeaver Application Server ABAP Security Guide* ►.

## 4.4 Authorizations

Demand Data Foundation (DDF) relies on the user management and user authentication mechanisms provided with the SAP NetWeaver Platform, in particular the SAP NetWeaver Application Server ABAP (AS ABAP).

### 4.4.1 Standard Roles

The following table shows standard roles (PFCG roles) used by Demand Data Foundation (DDF):

## Note

You can maintain roles using transaction `PF00`.

Table 11: Standard Roles

Role	Description
<code>SAP_ISR_DDF_MASTER</code>	Grants access to the following services: <ul style="list-style-type: none"><li>• Check Mass Maintenance</li><li>• Configure Load Balancing</li><li>• Define Area of Responsibility</li><li>• Location Groups</li><li>• Monitor Compressed Data</li><li>• Maintain Product Locations</li><li>• Monitor Exceptions</li><li>• Monitor Imports</li><li>• Placeholder Products</li><li>• Product</li><li>• Product Groups</li><li>• Remove Time Series</li><li>• Schedule Model and Forecasts</li><li>• Search for Schedule Jobs</li><li>• Search Placeholder Products</li><li>• Transportation Lanes</li></ul>
<code>SAP_ISR_DDF_READONLY_MASTER</code>	Grants access to the following services: <ul style="list-style-type: none"><li>• Check Mass Maintenance</li><li>• Configure Load Balancing</li><li>• Define Area of Responsibility</li><li>• Location Groups</li><li>• Maintain Product Locations</li><li>• Monitor Compressed Data</li><li>• Monitor Exceptions</li><li>• Monitor Imports</li><li>• Placeholder Products</li><li>• Product</li><li>• Product Groups</li><li>• Remove Time Series</li><li>• Schedule Model and Forecasts</li><li>• Search for Schedule Jobs</li><li>• Search Placeholder Products</li><li>• Transportation Lanes</li></ul>

## 4.4.2 Standard Authorization Objects

The following table shows the security-relevant authorization objects used by Demand Data Foundation (DDF).

### **i** Note

ACTVT denotes an activity. TS denotes a time series.

Table 12: Authorization Objects

Authorization Object	Fields	Values / Activities	Description
CA_POWL	POWL_APPID POWL_CAT POWL_LSEL POWL_QUERY POWL_RA_AL POWL_TABLE		Authorization for the functionality of the <i>Personal Object Worklist (POWL)</i> menu for the DDF POWL applications.
S_START	<i>Object Name</i> <i>Object Type</i> <i>Program ID</i>	/DMF/* and /PRM/* POWL WDYA R3TR	Used when checking the start authorization for particular TADIR objects (such as Web Dynpro applications). Do not use this authorization object directly in your own coding. It can only be used through the CL_START_AUTH_CHECK class.  For more information about the start authorization check for program objects with object catalog entries, see SAP Note <a href="#">1413011</a> .
/DMF/AOR	ACTVT	<i>01 Create</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Authorization for the <i>Maintain Area of Responsibility (AOR)</i> screen.
S_TCODE		Report /DMF/TS_DELETE RSM37 SM37	Transaction check at transaction start.
/DMF/CM_AT	ACTVT	<i>01 Create</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Authorization to assign attributes.

Authorization Object	Fields	Values / Activities	Description
/DMF/CM_IM	ACTVT	02 Change 03 Display 06 Delete	Authorization to define images.
/DMF/DISCH	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization for the distribution chain.
/DMF/DMDTS	ACTVT	01 Create 02 Change 03 Display 06 Delete	Authorization to access demand time series data, including any business intelligence (BI) interfaces that would be sending point-of-sale (POS) data or generic consumption data.
/DMF/EWB	ACTVT	03 Display	Authorization for the exception handling framework.
/DMF/FCANA	ACTVT	16 Execute 71 Analyze	Authorization to access forecasting and analytics.
/DMF/IMAGE	ACTVT		Authorization for the <i>Image</i> object.
/DMF/INV	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization for the <i>Inventory</i> object.
/DMF/LANE	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization for the <i>Transportation Lane</i> object.
/DMF/LBUI	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete 32 Save	Authorization for the load balancing configuration and user interface for the DDF server configuration.
/DMF/LOC	ACTVT	01 Create 02 Change 03 Display 06 Delete	Authorization for the <i>Location</i> object.



Authorization Object	Fields	Values / Activities	Description
/DMF/LOCHR	ACTVT	01 Create 02 Change 03 Display 06 Delete	Authorization for the <i>Location Hierarchy</i> object.
/DMF/ME	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization for the <i>Monitor Exceptions</i> service.
/DMF/MI	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization check for the <i>Monitor Imports</i> service.
/DMF/OFRSO	/DMF/CHCHK (first input value for this authorization object)	All activities	Internal organizational unit identifier for the distribution channel.
/DMF/OFRSO	/DMF/SOCHK (second input value for this authorization object)	All activities	Internal organizational unit identifier for the sales organization.
/DMF/OPUI	ACTVT	03 Display 16 Execute	Authorization to access the user interface of the <i>Schedule Model and Forecasts</i> service.
/DMF/PHP	ACTVT	01 Create 02 Change 03 Display 06 Delete	Authorization for the <i>Placeholder Product</i> object.
/DMF/PROD	ACTVT	01 Create 02 Change 03 Display 06 Delete 61 Export	Authorization for the <i>Product</i> object.
/DMF/PRDHR	ACTVT	01 Create or generate 02 Change 03 Display 06 Delete	Authorization for the <i>Product Hierarchy</i> object.
/DMF/PRDLC	ACTVT	01 Create 02 Change 03 Display	Authorization for the <i>Product Location</i> object in the consumer access layer.

Authorization Object	Fields	Values / Activities	Description
		<i>06 Delete</i>	
/DMF/TS	ACTVT	<i>01 Create or generate</i> <i>02 Change</i> <i>03 Display</i> <i>06 Delete</i>	Authorization for the <i>Time Series Data</i> object in the access layer.
/DMF/SLSH	ACTVT	<i>01 Create</i> <i>03 Display</i> <i>06 Delete</i>	Authorization for the <i>Sales History</i> object.

### 4.4.3 Authorization Requirements for Unified Demand Forecast (UDF)

The application function library for Unified Demand Forecast (UDF AFL) relies on the access control mechanisms of the SAP HANA database. SAP HANA has implemented the regular SQL authorization concept based on privileges. Privileges can be granted to users either directly or indirectly (through roles). A role is a collection of privileges that can be granted to either a user or another role. We recommend that you grant privileges indirectly.

For more information about user management, authentication, and authorization, see the *SAP HANA Security Guide* at ► [help.sap.com/hana\\_appliance](https://help.sap.com/hana_appliance) ► *Security Information* ►.

#### Prerequisites

- You need an SAP NetWeaver user who can access the SAP HANA database.
- You also have created this user in the SAP HANA database.
- You have read SAP Note [1846194](#) and are aware of the user and role concept for executing AFLs.

#### Integration

1. In SAP HANA studio, create the two roles required for UDF:

Table 13: UDF Roles

Name	Purpose
UDF_EXECUTE	<ul style="list-style-type: none"> <li>• Defines all privileges required to execute UDF.</li> <li>• Used by the ABAP db default user.</li> </ul>
UDF_DEPLOY	<ul style="list-style-type: none"> <li>• Defines all privileges required to deploy the SAP HANA content for UDF.</li> <li>• Required to import and activate the SAP HANA content.</li> </ul>

- Now assign the privileges. For this, adapt the roles that you have created in the first step to include the following privileges for the following users:

### **i** Note

The **ABAP** user and **ABAP** database schema are required in SAP NetWeaver to access the SAP HANA database. Note that they have the same name. Depending on your system landscape and settings, this name may be different.

Table 14: UDF\_EXECUTE Role

User	SQL Privileges	On Database Schema	Analytic Privileges	Grant this Role to this User
ABAP	SELECT INSERT UPDATE DELETE	ABAP	_SYS_BI_CP_ALL	AFL__SYS_AFL_UDFC ORE_AREA_EXECUTE  The role is created automatically when you install the UDF AFL.
	SELECT EXECUTE	_SYS_BIC		
_SYS_REPO	SELECT with grant option	ABAP		

Table 15: UDF\_DEPLOY Role

User	SQL Privileges	On Database Schema	System Privileges	Grant this Role to this User
ABAP	SELECT	ABAP	CATALOG_READ	CONTENT_ADMIN
_SYS_REPO	SELECT INSERT DELETE UPDATE	ABAP		AFL__SYS_AFL_UDFC ORE_AREA_EXECUTE  The role is created automatically when you install the UDF AFL.

## 4.5 Security Protection

### **➔** Recommendation

To increase security and prevent access to the SAP Logon tickets and security session cookies, you should activate secure session management.

We also highly recommend using Secure Sockets Layer (SSL) to protect the network communications where these security-relevant cookies are transferred.

### Session Security Protection on the SAP NetWeaver Application Server ABAP (AS ABAP)

To activate session security on the SAP NetWeaver AS ABAP, set the corresponding profile parameters and activate the session security for the client (transaction `SICF_SESSIONS`).

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For more information, see *Activating HTTP Security Session Management on AS ABAP* in the *SAP NetWeaver Application Server ABAP Security Guide*. You can find this guide on SAP Service Marketplace at ► [help.sap.com/nw74](https://help.sap.com/nw74) ► *Security Information* ► *Security Guide* ► *Security Guides for SAP NetWeaver Functional Units* ► *Security Guides for the Application Server* ► *Security Guides for AS ABAP* ► *SAP NetWeaver Application Server ABAP Security Guide* ►.

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## 5 Operation

Demand Data Foundation is an add-on to SAP NetWeaver, so no technical configuration specific to DDF is required. DDF only uses basis parameters for the database, operating system, and application server ABAP provided by SAP NetWeaver. The technical configuration required for running DDF is part of SAP NetWeaver.

### 5.1 Monitoring

Monitoring is an essential task in managing SAP technology. Monitoring allows you to detect any irregularities or deviations from the ideal business process flow. It also allows you to detect error situations concerning core business processes at an early stage.

Demand Data Foundation (DDF) uses the SAP NetWeaver standard functionality for monitoring. For more information about this functionality, see the *Operation Information* on SAP Service Marketplace at [help.sap.com/nw74](http://help.sap.com/nw74) ▶ *System Administration and Maintenance Information* ▶.

#### 5.1.1 Alert Monitoring

SAP provides you with the infrastructure and recommendations to set up your alert monitoring in such a way that critical situations are identified as quickly as possible.

Proactive, automated monitoring is the basis for ensuring reliable operations for your SAP system environment. SAP provides you with the infrastructure and recommendations needed to set up your alert monitoring to recognize critical situations for Demand Data Foundation (DDF) with Unified Demand Forecast (UDF) as quickly as possible.

#### 5.1.2 Monitor Installation and Setup

The Computing Center Management System (CCMS, transaction `RZ20`) is an infrastructure for monitoring system landscapes centrally. CCMS continually checks all landscape components, ensures the availability of all productive components, and monitors the overall system health. CCMS is also the central entry point for deeper analysis by presenting an overview of the faulty component. Analysis tools guide you directly into helpful expert tools for further analysis.

Alerts are a central element of the monitoring. They quickly and reliably report problems (such as a value exceeding a particular threshold, or a component having been inactive for a defined period of time). If something is wrong, an alert is triggered, and the person in charge can be notified automatically (for example, via email or SMS).

In order to enable the auto-alert mechanism of CCMS, see SAP Note [617547](#).

## 5.1.3 Component-Specific Monitoring

Demand Data Foundation (DDF) with Unified Demand Forecast (UDF) provides the *SAP DMF* monitor set for the *Computing Center Management System* monitoring (CCMS monitoring).

The *SAP DMF* monitor set displays the monitoring hierarchy of the following UDF services (transaction **RZ20**):

Table 16: Services and Processes for CCMS Monitoring

Services	Monitoring Tree Elements (MTEs, nodes)
<i>Model by hierarchy</i>	DMF_MODEL_PROCESSES_BY_HIER
<i>Model by product location</i>	DMF_MODEL_PROCESSES_BY_PROD_LOC
<i>Forecast by hierarchy</i>	DMF_FORECAST_PROCESSES_BY_HIER
<i>Forecast by product location</i>	DMF_FORECAST_PROCESSES_BY_PROD_LOC
<i>Calculate hierarchical priors</i>	DMF_CALCULATE_HIER_PRIORS

### Note

A node may display the *MTE class: No MTEs currently available* message. This message indicates that the associated UDF service has not yet been run on this system to generate the *Monitoring Tree Elements (MTEs)* for this node.

## 5.1.4 Detailed Monitoring

### 5.1.4.1 Prepare Exception Handling

Demand Data Foundation (DDF) uses the exception handling framework to log errors that have occurred during background processes.

You must first define the exception messages in the system before actual exception instances can be created. The exception definition is based on the general ABAP message concept. Each exception is identified by the combination of a message class and a message number. Each instance of an exception has a unique internal ID (message handle).

### Note

The following subobjects do not use the exception handling framework:

- /DMF/ENGINE
- /DMF/MERCH\_PLAN
- /DMF/OFFER
- /DMF/OFFER\_PURGE
- /DMF/PHP

## 5.1.4.2 Configure Exceptions

You can configure and maintain exceptions in Customizing (transaction **SPRO**) under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Exception Management* ►.

### Define High Level Exceptions

You can define high level exceptions in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Exception Management* ► *Maintain Configuration Data for High Level Exceptions* ►.

You can do the following:

- Assign business areas to exceptions
- Assign priorities to exceptions
- Define message types
- Define validity periods for exceptions

### Define Low Level Exceptions

Additionally, you can assign a priority to each low level exception in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Exception Management* ► *Maintain Configuration Data for Low Level Exceptions* ►.

### Define Customer-Specific Replacement Messages

You can define your own message texts in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Exception Management* ► *Define Customer-Specific Replacement Messages* ►.

### Define Customizable Message Status

You can define the available exception statuses in Customizing under ► *Cross-Application Components* ► *Demand Data Foundation* ► *Basic Settings* ► *Exception Management* ► *Define Customizable Message Status* ►.

## 5.1.4.3 Monitor Exceptions

Exceptions are system-based messages that inform users about situations requiring special attention or action. You use the *Monitor Exceptions* function to review and process the exceptions.

You have the following options:

- Get an overview of the number of exceptions
- Filter the exceptions based on a number of different criteria
- Perform additional filtering based on the business area, context type, or context instance (value)
- Display the selected exceptions in a table
- Display the detailed information on the exception
- Display all low level exceptions assigned to a selected high level exception

## 5.1.4.4 Purge Obsolete Exceptions

You might have a high number of exceptions occurring during system operation. We recommend that you regularly purge (delete) obsolete exceptions.

You can configure and perform the purging of exceptions using the *Purging Exceptions from the Database* report. You can access this report on the *SAP Easy Access* screen under ► *Services* ► *Mass Maintenance Services* ► *Purging Exceptions from the Database* 🔍.

## 5.1.4.5 Application Log

The *Application Log* function collects messages, exceptions, and errors, and displays them as logs.

You can search the logs for the information that you're interested in. Use transaction **SLG1** to call up the *Analyze Application Log* screen and specify your search criteria.

Note that Demand Data Foundation (DDF) uses the following:

- Object:
  - /DMF/APPL
- Subobjects:
  - /DMF/ENGINE
  - /DMF/MERCH\_PLAN
  - /DMF/OFFER
  - /DMF/OFFER\_PURGE
  - /DMF/PHP

The logs provide you with the following information:

- Basic header information on the events that have occurred
- Event details
- Technical information
- Message short and long texts

## 5.1.4.6 Workload Monitoring

When an external system sends object instances (such as master data) to Demand Data Foundation (DDF) using an inbound Remote Function Call (RFC) or enterprise services, the data is first stored in the DDF staging tables. In a second step, the data is transferred from the staging tables to the production tables.

You can trigger object transfers via an initial load or via a delta load, which transfers only the changed object instances.


You can schedule the /DMF/PROCESS\_STAGING\_TABLES report (transaction **SE38**) as a batch job to move the data from the staging tables to the corresponding business object.

### ➔ Recommendation

If the processing of transportation lane, product location, or sales data from the staging tables to the production tables takes more time than expected, you can use the /DMF/SET\_STAGING\_CONFIG\_TABLE



report to activate an alternative packaging. For more information about this report, see the report documentation (transaction **SE38**) and SAP Note [2019909](#).

You can also move the data from the staging tables manually using the *Monitor Imports* function. For more information, see SAP Library on SAP Help Portal at [help.sap.com/car](#) > *Application Help* > *SAP Customer Activity Repository* > *Demand Data Foundation* > *General Services* > *Monitor Imports* .

## 5.1.5 Ensure Data Consistency

External data providers write data into the staging tables of Demand Data Foundation (DDF). The data providers can additionally provide a high resolution time stamp when a Remote Function Call (RFC) is performed.

Every data record in a staging table has a high resolution time stamp (`EXT_KEY_TST` field). The time stamp is part of the data record key. As a result, different records for the same object can exist in the table at any given point in time. When further processing the data from the staging table, the newest data record of each object is used.

### Authorizations

The system performs authorization checks on the following function groups:

- `/DMF/BI_SALES_INBOUND`
- `/DMF/MDIF_IMAGE_DATA`
- `/DMF/MDIF_LANE`
- `/DMF/MDIF_LOCATION`
- `/DMF/MDIF_LOC_HIER`
- `/DMF/MDIF_PRODUCT`
- `/DMF/MDIF_PROD_HIER`
- `/DMF/MDIF_PROD_LOC`
- `/DMF/OPIF_INVENTORY`
- `/DMF/TS_GENERIC_INBOUND`

## 5.1.6 Manage Demand Data Foundation (DDF)

SAP provides an infrastructure to help your technical support consultants and system administrators manage SAP components and perform the required technical administration and operation tasks.

### Starting and Stopping

When you start SAP NetWeaver, you start the system database, the application servers, and the respective processes that the system provides.

### Backup and Restore

We recommend that you do the following:

- Back up the system landscape regularly to ensure that you can restore and recover it in the event of a failure.
- Create a backup and restore strategy for the system landscape.

- Cover disaster recovery processes in the backup and restore strategy.
- Specify in your backup and restore strategy that the normal data and the backup data are stored in separate physical locations, so that both types of data are not lost in the event of a disaster.
- Include the backup and restore strategy in the company's overall business requirements.

## Schedule Periodic Tasks

You can automate scheduled tasks using a task scheduler program.

To schedule automated import tasks, you can use the `/DMF/PROCESS_STAGING_TABLES` report (transaction **SE38**) in the `/DMF/EXT_IF_COMMON` package.

Make sure that the master data is continuously imported into DDF. If you use an SAP ERP application as your master data system, schedule the DRF data replication framework (transaction **DRFOUT**) to periodically send the data. For more information about importing data into DDF, see the *Configure Demand Data Foundation (DDF)* section of the *Common Installation Guide*. You can find this guide on the SAP Help Portal at [help.sap.com/car](https://help.sap.com/car) **Installation and Upgrade Information** **Installation Guide**.

## Do Required Periodic Manual Tasks

A manual task needs a person to execute it. Manual tasks may be required for individual components and are therefore relevant in each scenario that uses the component. Other manual tasks may be relevant for certain business scenarios only. It is important that you monitor the successful execution of these tasks on a regular basis.

For an overview of manual tasks for managing DDF, see the following table.

### ➔ Recommendation

You can use transaction **SE38** to run reports and programs and call up the respective documentation.

Table 17: Manual Tasks for Managing DDF

Task	Tool Supporting the Task	Recommended Frequency	Description
Purge master data	Report <code>/DMF/PURGE_AGENT</code>	As required	You can use this report to purge master data. For more information, see the report documentation.
Delete obsolete time series data	Report <code>/DMF/TS_DELETE</code>	As required	You can select the data to be deleted by product and by location using key figure parameters (KPRM). You can delete data for the following time series types: <ul style="list-style-type: none"> <li>• Universal (UN)</li> <li>• Location Universal (UL)</li> <li>• Point of Sale (POS)</li> </ul> For more information, see the report documentation.
Delete obsolete exception message data	Report <code>/DMF/PURGE_EWB_MESSAGES</code>	As required	You do not need to specify parameters for this report. You can either execute it

Task	Tool Supporting the Task	Recommended Frequency	Description
			directly or schedule it for execution. Which data is purged depends on how you have configured the exceptions in Customizing and on which deletions are performed on the user interface.

## Load Balancing

During workload processing, the system breaks a single operation or service into many smaller tasks (request decomposition). It then runs each of these tasks as separate dialog work processes (task requests or screen changes), up to the configured maximum number of work processes. Since the system attempts to run this maximum number of processes in parallel, you use load balancing to help more evenly distribute the workload.

DDF uses the standard functionality of SAP NetWeaver for logon and load balancing.

You must ensure that you have entered a value in the *Logon/Server Group* field and have entered a value greater than zero in the *Max Work Processes* field for **all** services that you want to use. For example, to use load balancing for the **Product Location Price** entry, which is located in the *Service* field, you enter a value in the *Logon/Server Group* field and enter a value greater than zero in the *Max Work Processes* field.

### Note

For the demand modeling and forecasting services, the maximum number of records is essential. You must enter a value greater than zero in the *Number of Records* field (for more information, see SAP Note [1898341](#)).

## 5.1.7 Support Desk Management

Support Desk Management enables you to set up an efficient internal support desk for your support organization that seamlessly integrates your end users, internal support employees, partners, and SAP Active Global Support specialists with an efficient problem resolution procedure. For support desk management, you need the methodology, management procedures, and tools infrastructure to run your internal support organization efficiently.

The following topics are covered:

- Remote support setup
- Problem message handover

To create SAP support messages for your installation, you specify the software component version for Demand Data Foundation (for example, `RTLDDF 200`).

## SAP Custom Development

SAP Custom Development is an SAP team that works with customers to extend the standard ABAP functionalities associated with the different software components (such as `RTLDDF 200`).

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## Remote Support

You can set up a read-only user for remote support purposes that provides access to the consuming applications and SAP NetWeaver transactions.

The following roles should be assigned to this user:

- `SAP_QAP_BC_SHOW` (for SAP NetWeaver)
- Role of the consuming application

## 6 Solution-Wide Topics

### 6.1 SAP Solution Manager

We highly recommend that you use SAP Solution Manager as the platform and tool to support the implementation and configuration of your solution. SAP Solution Manager significantly accelerates the implementation process and helps you configure your solution to achieve your business goals.

#### ➔ Recommendation

Maintenance Optimizer (MOPZ) 3.0 is the standard for SAP Solution Manager 7.1 SP12. You may experience difficulties installing products if you are running an older version of SAP Solution Manager.

We recommend upgrading to the latest version of SAP Solution Manager. If you do not wish to do so, you must implement SAP Note [1940845](#) to render the MOPZ front-end compatible with the back-end.

For more information about setting up SAP Solution Manager, see [Information Available on SAP Service Marketplace and SAP Help Portal \[page 9\]](#).

SAP also delivers support services based on the business scenarios designed and documented in SAP Solution Manager.

#### i Note

The configuration information in SAP Solution Manager is structured as follows:

- At the highest level you find business scenarios.
  - Each business scenario can contain one or more business processes.
  - Each business process can contain one or more business process steps.

The implementation process can be further accelerated using implementation content specifically tailored to your solution. For more information about the availability of such content for your solution, see the SAP Support Portal at [support.sap.com/solutionmanager](#).

#### Access Configuration Information for DDF and UDF in SAP Solution Manager

To access the configuration information for DDF and UDF in this release of SAP Customer Activity Repository 2.0 <your support package>, follow these steps:

1. Log on to your SAP Solution Manager system.
2. Execute transaction `SOLAR_LIBRARY` to open the *Business Process Repository (BPR)*.
3. Check that you are in the correct product context and system group:
  1. Choose **Settings** > *Products & Systems*.
  2. Under *Product Contexts*, select *CAR Retail Application Bundle 1.0*.
  3. Under *System Group*, select SAP CARAB 1.0.
4. Save your settings.

4. Navigate to the configuration information for DDF and UDF under ► [Solutions/Applications](#) ► [SAP for Retail](#) ► [Scenarios](#) ► [Customer Activity Repository](#) ► [Business Processes](#) ► [Enabling Demand Data Foundation and Creating Demand Forecast](#) ►.

### Note

For additional configuration information, see the [Common Master Guide](#). You can find this guide on SAP Help Portal for SAP Customer Activity Repository at ► [help.sap.com/car](https://help.sap.com/car) ► [Installation and Upgrade Information](#) ► [Master Guide](#) ►.

## 6.2 Service-Oriented Architecture (SOA)

SAP's delivery on SOA (service-oriented architecture) differs from the pure architectural concept of SOA in the delivery of ready-to-use enterprise services. Enterprise services are SAP-defined Web services which provide end-to-end business processes or individual business process steps that can be used to compose business scenarios while ensuring business integrity and ease of reuse. SAP designs and implements enterprise service interfaces to ensure semantic harmonization and business relevance. This section deals with the service-enablement of SAP Business Suite 7.

### 6.2.1 Service Enablement

The service enablement of SAP Business Suite consists of one or more of the following SAP components:

- **SAP Business Suite 7**

Enterprise services are an integral part of the software components of the SAP Business Suite applications. Enterprise services are the technical interfaces to the functionalities available in the business application.

- **SAP Process Integration (PI) 7.0 or higher**

SAP Process Integration is an open integration and application platform that provides tools enabling you to set up a service-oriented architecture (SOA) for business applications. You can use the platform to provide, discover, and consume services, integrate applications using the integration server, and manage business processes.

Process integration is required in a runtime environment to consume enterprise services in a mediated scenario.

### Note

Asynchronous services that are enabled for [Web Services Reliable Messaging \(WSRM\)](#) can be called in a point-to-point communication scenario. Otherwise, asynchronous services can only be consumed in a mediated scenario.

We recommend that you use the highest version of SAP Process Integration. For more information, see SAP Notes [1515223](#) and [1388258](#).

### Recommendation

Starting with SAP Process Integration 7.3, SAP provides the new installation option [Advanced Adapter Engine Extended \(AEX\)](#). AEX is a cost-saving option compared to a classical dual-stack implementation. As

AEX is based on the Application Server Java (AS Java) alone, it is easier to install and maintain and requires less memory and data storage. Therefore, you should investigate if a Java-only implementation of an SAP Process Integration system is suitable for your use case.

For more information, see SAP Library for SAP Process Integration on SAP Help Portal at ► [help.sap.com/nw\\_platform](https://help.sap.com/nw_platform) ► [Application Help](#) ► [SAP Process Integration](#) ► as well as SAP Note [1573180](#).

- **Enterprise Services Repository**

The Enterprise Services Repository (ES Repository) is the central repository that contains the definition of all enterprise services and models. It is a design time environment that enables you to create and enhance enterprise service definitions. The ES Repository is shipped with SAP Process Integration (as of SAP PI 7.1) and with SAP Composition Environment (as of SAP CE 7.1).

**i Note**

In a SAP NetWeaver 7.0x landscape, you use the Integration Repository to create and enhance enterprise service definitions.

- **Services Registry**

The Services Registry (SR) is shipped with SAP Process Integration (as of SAP PI 7.1) and with SAP Composition Environment (as of SAP CE 7.1). The Service Registry is only required for publishing enterprise service end points (Web services) that have been configured and activated in SAP Business Suite.

- **SAP Composition Environment (SAP CE) 7.1 or higher**

SAP Composition Environment provides a robust environment for designing and implementing composite applications.

The design time environment of SAP Composition Environment can be used for the model-driven design and development of composite applications based on enterprise services. SAP Composition Environment also offers the tools and the environment necessary for running composite applications fast and efficiently in a runtime environment.

## 6.2.2 Install the Service-Oriented Architecture (SOA)

The installation of service interfaces and the service enablement of SAP Business Suite consist of one or more of the following phases:

- **Identify software components and required business functions**

Use the technical data section of the enterprise services documentation to identify the following data for each enterprise service:

- the software component version with which the service was shipped
- the business functions that need to be activated

- **Identify technical usages** (relevant for SAP ERP only)

SAP Note [1818596](#) maps business functions and software component versions to technical usages. Use this documentation to identify the required technical usages for your list of software component versions and business functions.

- **Install the ECC-SE software component** (relevant for SAP ERP only)

The ECC-SE software component contains service implementations for the SAP ERP Central Component (SAP ECC). You need to explicitly install this component if you intend to use enterprise services for SAP ECC

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functionality. In this case, you must also select the *ESA ECC-SE* technical usage when installing the enhancement package.

- **Select and install together with the other parts of the enhancement package**

When installing the enhancement package, you must select all technical usages that you have identified for the service enablement and for enhanced features in SAP Business Suite. The technical usages that you select will install the corresponding software components that contain the enterprise services interfaces and implementations.

- **Import Enterprise Services Repository (ESR) Content** (optional)

To install the content required for the enterprise service definitions, you must select the *XI Content* technical usage when installing the enhancement package. This usage type downloads the content files for SAP Process Integration (PI) 7.0 or higher. Unpack the ZIP file and copy the `tpz` files corresponding to your SAP PI version into the import directory of your Integration Repository (for SAP PI 7.0x) or Enterprise Services Repository (for ES Repository 7.1 or higher). To import the content files into the corresponding repository, use the import function. To do this, choose ► *Tools* ► *Import Design Objects* ►.

- **Configure Services Registry** (optional)

The Services Registry is shipped starting with SAP Process Integration (PI) 7.1 and SAP Composition Environment (CE) 7.1. You must configure the Services Registry and then publish the enterprise services from the SAP Business Suite application to the registry using the `SOAMANAGER` transaction in the back-end.

For more information about SAP PI, SAP CE, and the Enterprise Services Repository, see the corresponding installation guides and master guides, which you can find on SAP Help Portal at ► [help.sap.com/netweaver](https://help.sap.com/netweaver) ►.

## 6.2.3 Related Documentation

For more information about service-oriented architecture (SOA), see the following sources:

- SAP Community Network at [scn.sap.com/community/soa](https://scn.sap.com/community/soa) (registration required)
- SAP Note [1359215](#): Technical prerequisites for using enterprise services (relevant for SAP ERP only)
- SAP Note [838402](#): Problems with non-Unicode system landscapes



# Typographic Conventions

Table 18

Example	Description
<Example>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, "Enter your <User Name>".
► Example ► Example ▢	Arrows separating the parts of a navigation path, for example, menu options
<b>Example</b>	Emphasized words or expressions
<b>Example</b>	Words or characters that you enter in the system exactly as they appear in the documentation
<a href="#">www.sap.com</a>	Textual cross-references to an internet address
<a href="#">/example</a>	Quicklinks added to the internet address of a homepage to enable quick access to specific content on the Web
<a href="#">123456</a>	Hyperlink to an SAP Note, for example, SAP Note <a href="#">123456</a>
<i>Example</i>	<ul style="list-style-type: none"> <li>Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options.</li> <li>Cross-references to other documentation or published works</li> </ul>
Example	<ul style="list-style-type: none"> <li>Output on the screen following a user action, for example, messages</li> <li>Source code or syntax quoted directly from a program</li> <li>File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools</li> </ul>
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE
EXAMPLE	Keys on the keyboard



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